

**CATEGORY VIII. MILITARY AIRCRAFT (COMBAT,
TACTICAL AIR VEHICLES), AND ASSOCIATED
EQUIPMENT**

(CATEGORY VIII - U.S. MUNITIONS LIST).

NOTE: For electronic items associated with items in this Category (e.g. fire control, countermeasures, avionics, etc.), coding guidance in paragraphs A. and B. of Categories XI and XII apply.

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

Engine afterburners.

Components and parts incorporating Radar Absorbing Material (RAM).

Cartridge-actuated devices utilized in emergency escape of personnel. (**NOTE:** For items which are considered live AEDA, Demilitarization Code "G" will be assigned.

Airborne refueling equipment specifically designed for use with military aircraft, spacecraft and missiles.

Radomes.

Inertial navigation systems, aided or hybrid inertial navigation systems, Inertial Measurement Units (IMU's) *and Attitude and Heading Reference Systems (AHRS)* specifically designed, modified, or configured for military use and all specifically designed components, parts, and accessories. For other inertial reference systems and related components refer to Category XI.

Aircraft fuselage.

Tail assembly.

Wing spar.

Missile ablative shell.

Impact detectors and circuitry.

Missile guidance systems.

Target selection programming data

Engine turbine wheel and shaft assembly of turbojet, turboprop, and turbofan engines.

Ignition system for ram-jet and pulse-jet engines.

Fuel system including the variable area nozzles or fuel spray systems, as applicable, for ram-jet and pulse-jet engines.

Engine mounting fittings of ram-jet and pulse-jet engines.

Thrust chamber.

Turbine pump.

Balanced material orifices.

Gas generator (when used).

Engine mounting fittings of rocket engines).

Pylons for external stores (armament, fuel, etc.).

Gun barrels.

Launcher barrels.

Tub tubes or pods.

Receivers.

Firing mechanisms.

Gun rotor assemblies.

Delinking feeders.

Electric drive assemblies and mounts.

Ammunition containers.

Ammunition crossover assemblies.

Magazines and chute assemblies.

Controllers.

Intervalometers.

Gunner control panel.

Pilot wing control panels.

Reflex sights.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Key points to be demilitarized: Aircraft fuselage, tail assembly, wing spar, armor, radomes, armament and armament provisions, explosives (includes explosive bolts and squibs), classified items, missile ablative shell, impact detectors and circuitry, missile guidance systems, and target selection programming data, other items designated elsewhere in this Appendix and as indicated under paragraph E. below (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points).

Aircraft, including but not limited to helicopters, non-expansive balloons, drones, and lighter-than-air aircraft, which are specifically designed, modified, or equipped for military purposes. This includes but is not limited to the following military purposes: gunnery, bombing, rocket or missile launching, electronic and other surveillance, reconnaissance, refueling, aerial mapping, military liaison, cargo carrying or dropping, personnel dropping, airborne warning and control, and military training.

Developmental and experimental aircraft and components thereof which have a significant military applicability, excluding such aircraft and components that have been certified by the Federal Aviation Administration and determined through the commodity jurisdiction procedure, to be subject to the export control jurisdiction of the Department of Commerce.

Aircraft engines, except reciprocating engines, specifically designed or modified for the aircraft in paragraphs A and B of this category. (Key points are: Engine turbine wheel and shaft assembly of turbojet, turboprop, and turbofan engines. Ignition system, fuel system (including the variable area nozzles and/or fuel spray systems, as applicable), and engine mounting fittings of ram-jet and pulse-jet engines. Thrust chamber, turbine pump, balanced material orifices, gas generator (when used) and engine mounting fittings of rocket engines.

Ground effect machines (GEMS) specifically designed or modified for military use including but not limited to surface effect machines and other air cushion vehicles. (Key points are all components, parts, and accessories, attachments, and associated equipment specifically designed or modified for use with such machines).

Associated armament, equipment and subsystems including but not limited to gun barrels, launcher barrels, tub tubes or pods, receivers, firing mechanisms (except nonmetallic parts which may be disposed of without demilitarization) (figs. 42, 43, 44, 45 and 47), rotor assemblies, delinking feeders, electric drive assemblies and mounts (figs. 44, 46 and 48), ammunition containers, crossover assemblies, magazines and chute assemblies, controllers, intervalometers, electric components assemblies, gunner control panel, pilot wing control panels and reflex sights.

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Launching and recovery equipment, other than that covered by Category VI above, for the articles in paragraphs A and B of this category, if the equipment is specifically designed or modified for military use or for use with spacecraft. Fixed land-based arresting gear is not included in this category.

All other components, parts, accessories, attachments, and associated equipment (including ground support equipment) specifically designed or modified for the articles in paragraphs A through B of this category, excluding aircraft tires and propellers used with reciprocating engines.

All other technical data and defense services directly related to any defense article enumerated this category.

E. Method and degree of demilitarization:

1. **MILITARY AIRCRAFT.**

a. **Fixed wing single and multiple engine aircraft.** The area where the wing attaches and becomes a part of the fuselage structure will be mutilated in a manner to completely sever the wing spar to make it unfit for flight. The empennage (tail assembly) will be destroyed by mutilating the horizontal and vertical stabilizer attaching fittings area in such a manner as to make it unfit for flight. The fuselage will be destroyed by severing an area (normally at the production break) between the wing and empennage. (See figs. **42** and **43**, Appendix 7).

b. **Attack helicopters.** Helicopters designed specifically for attack purposes will be demilitarized by *shredding or smelting* the entire airframe and fuselage; ensuring that the transmission mounts and supporting structural beams, engine deck in area of mounts, wing attaching mounts and support beam structure, fuselage to tail boom attaching mounts and tail rotor gear box mounts (see figure **44**.) have been destroyed.

NOTE (For Army managed assets): Certification as specified in U.S. Army TM 1-1500-328-23, Paragraph 9-3, F, will be complied with. Aircraft data plates will be removed prior to the physical delivery of the former aircraft to the local DRMO. After the turn-in of the scrap, the data plate, historical forms and records, certificates of demilitarization, and all required DA Form 2410's will be processed and forwarded to AMCOM per DA Pamphlet 738-751 and TM 1-150-328-23.

2. **ARMAMENT** will be destroyed as specified for Categories I, II and IV above.

3. **EXPLOSIVES**, including explosive bolts and squibs, will be disposed of as specified for Category III.

4. **CLASSIFIED** items will be disposed of as prescribed for Category IX.

5. **ENGINES.**

a. **Turbojet, turboprop and turbofan engines.** Remove the turbine wheel and shaft assembly from the engine and cut a segment (two or more "fir trees") from turbine wheel bucket splines. Sever the shaft at the wheel end bearing point. When multistage turbines are involved, only the shaft and last stage turbine wheel need be demilitarized. In cases where it is not economically practicable or feasible to remove the turbine wheel and shaft assembly from the engine, gain access to them by entering through shroud either by removal or cutting hole in shroud.

b. **Ram-jet and pulse-jet engines.** Completely destroy key points listed in subparagraph B above.

c. **Rocket engines.** Completely destroy key points listed in subparagraph B above.

7. **NON-EXPANSIVE BALLOONS.** Specific instructions and technical guidance for demilitarization will be furnished by the Commander, Naval Air Systems command, Department of the Navy, Washington, D.C., upon request.

8. **TECHNICAL DATA** will be demilitarized by burning, shredding, or pulping.

CATEGORY IX. MILITARY TRAINING EQUIPMENT

(CATEGORY IX - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

RESERVED

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Attached items, components, parts, accessories, etc. that are covered under other Categories in this Appendix (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points) (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Military training equipment including but not limited to *non-flyable* attack trainers, radar target trainers, radar target generators, gunnery training devices, antisubmarine warfare trainers, target equipment, armament training units, air combat training systems, radar trainers, navigation trainers, and simulation devices related to defense articles *that differ substantially from the actual item and not covered by other Categories, this Appendix (contact the DDPM for additional information/determination).*

Components, parts, accessories, attachments, and associated equipment specifically designed or modified for the articles in this category.

Technical data and defense services directly related to the defense articles enumerated above.

CATEGORY X. PROTECTIVE PERSONNEL EQUIPMENT

(CATEGORY X - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

RESERVED

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Attached items, components, parts, accessories, etc. that are covered under other Categories in this Appendix (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points) (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Body armor specifically designed, modified or equipped for military use and articles designed, modified or equipped to protect against or reduce detection by radar, infrared (IR) or other sensors. (total destruction).

Flak-suits (front, back, groin and apron). (total destruction).

Bullet-proof vests. (total destruction).

Equipment designated in appropriate DoD Component publications and similar items of personal body armor which may be worn or concealed under clothing. (total destruction).

Toxicological, biological and radiological masks and filters. (key point - canister/filter element, face piece).

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Anti-G suits.

Anti-exposure suits.

Radiological control clothing.

Military helmets equipped with communications hardware, optical sights, slewing devices or mechanisms to protect against thermal flash or lasers, excluding standard military helmets. NOTE: This applies only to the helmet itself. Demilitarization of attached hardware/devices may be required and will be in accordance with other Categories of this Appendix, as applicable.

Partial pressure suits and liquid oxygen converters used in aircraft in Category VIII.

Protective apparel and equipment specifically designed or modified for use with the articles in Category XIV.

Components, parts, accessories, attachments, and associated equipment specifically designed or modified for use with the articles in this Category.

Technical data and defense services directly related to the defense articles enumerated above.

E. Method and degree of demilitarization:

1. **CANISTERS AND FILTERS** will be demilitarized as economically as practicable in accordance with existing environmental standards, safety and operational regulations, to the point of assuring freedom from toxic and other environmental hazards.
2. **PROTECTIVE MASKS** will have mouth plug removed from face piece and destroyed or face piece may be slashed.
3. **ALL OTHER ITEMS** require complete destruction beyond possible use, repair or restoration. This will be accomplished by cutting, burning or crushing.

CATEGORY XI. MILITARY ELECTRONICS

(CATEGORY XI - U.S. MUNITIONS LIST).

This category applies to electronic equipment not included in Category XII of the Munitions List which is assigned a military designation (e.g.: AN/ALQ-65, *see Appendix 3*) or is specifically designed, modified or configured for military application. This equipment includes but is not limited to the items listed in paragraphs A, B, C and D.

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

Underwater sound equipment to include active and passive detection, identification, tracking, and weapons control equipment.

Underwater acoustic active and passive countermeasures and counter-countermeasures.

All types of chaff (*these items will be assigned Demilitarization Code "F"*, see subparagraph E.2. below).

Radomes.

Gyroscopes.

Transmitters.

Receivers.

Amplifiers.

Accelerometers.

Processors.

Collimators.

Microprocessors.

Radio Frequency (RF) heads, cavities and components.

Logic circuits.

Traveling wave tubes.

Cathode ray tubes.

Klystrons.

Oscillators.

Noise generators.

Magnetron tubes or solid state devices.

Modulators and modulation circuits.

Frequency sensitive RF components.

Antennae.

Waveguides.

Intervalometers.

Frequency generators.

Tuning coils.

Printed circuit boards/cards.

Memory circuits.

Delay lines.

Synchronizers.

Encoders and decoders.

Computers specifically designed *or developed* for military application and any computer specifically modified for use with any category of the U.S. Munitions List.

Antenna horns.

Performance data plates, identification plates or decals that reveal any military offensive or defensive advantage.

Electronic systems or equipment designed or modified to counteract electronic surveillance or monitoring. A system meeting this definition is controlled under the U.S. Munitions List even in instances where any individual pieces of equipment constituting the system may be subject to the controls of another U.S. Government agency. Such systems or equipment described above include, but are not limited to those:

Designed or modified to use cryptographic techniques to generate the spreading code for spread spectrum or hopping code for frequency agility. This does not include fixed code techniques for spread spectrum.

Designed or modified for using burst techniques (e.g., time compression techniques) for intelligence, security, or military purposes.

Designed or modified for the purpose of information security to suppress the compromising emanations of information bearing signals. This covers TEMPEST suppression technology and equipment meeting or designed to meet government TEMPEST standards. This definition is not intended to include equipment designed to meet Federal Communication Commission (FCC) commercial electro-magnetic interference standards or equipment designed for health or safety.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Key points to be demilitarized: Transmitters, receivers, amplifiers, accelerometers, processors, collimators, microprocessors, RF heads and cavities, logic circuits, traveling wave tubes, cathode ray tubes, klystrons, oscillators, noise generators, magnetron tubes or solid state devices, modulators and modulation circuits, frequency sensitive RF components, antennae, radomes, waveguides, intervalometers, frequency generators, tuning coils, printed circuit boards/cards, memory circuits, delay lines, synchronizers, encoders and decoders, computers, antenna horns, performance data plates, identification plates or decals that reveal any military offensive or defensive advantage and other items designated elsewhere in this Appendix and as indicated under paragraph E. below (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points).

Radar systems, with capabilities such as search, acquisition, tracking, moving target indication, imaging radar systems,

All IFF (Identification Friend or Foe) receivers, transmitters and associated equipment.

Electronic warfare (EW) equipment, such as active and passive countermeasures, active and passive counter-countermeasures, and radios (including transceivers) specifically designed or modified to interfere with other communication devices or transmissions.

Command, control and communication systems to include radios (transceivers), navigation, and identification equipment.

Electronic systems or equipment specifically designed, modified, configured for intelligence, security, or military purposes for use in search, reconnaissance, collection, monitoring, direction-finding, display, and analysis and production of information from the electromagnetic spectrum.

All other targeting and missile control receiving and transmitting equipment.

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Any experimental or developmental electronic equipment specifically designed or modified for military application or specifically designed or modified for use with a military system. (Total destruction)

Power Supplies (*missile related, unique*).

Emergency radio receiver-transmitter equipment and beacons designed to operate on peculiar military, interagency or international distress signal frequency (8364 KCS, 500 KCS, 121.5 MC, 282.8 MC and 243.0 MC), e.g., survival radios, AN/URC-4, AN/URC-10, AN/URC-11, AN/URC-64, AN/PRC-90, AN/PRC-103, AN/PRC-106 comprising types RT159A/URC-4, RT159B/URC-4, RT285/URC-11, RT285A/URC-11, and radio beacons AN/URT-21, 27, 33, AN/CRT 3, etc.. (Key point - Remove and dispose of separately the following crystals: Types CR-24/u and CR-56/u capable of transmitting on 500 KC, 8634 KC, 121.5 MC, 243.0 MC and 282.8 MC and other types of crystals designed specifically to operate on distress signal frequencies.)

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Any ground air traffic control radar which is specifically designed or modified for military application.

Power supplies (non-missile related).

Components, parts, accessories, attachments, and associated equipment specifically designed or modified for use or currently used with the equipment in this Category, except for such items as are in normal commercial use.

Technical data and defense services directly related to the defense articles enumerated above.

E. Method and degree of demilitarization:

1. **EMERGENCY RADIO RECEIVER TRANSMITTERS AND BEACONS.** Remove and destroy crystals from receiver-transmitter. Condition tags and turn-in documents must show that crystals are to be removed prior to donation or disposal to the public. Radio beacons will be crushed or otherwise mutilated to preclude further use of the item for its intended purpose.

2. **ELECTRONIC COUNTERMEASURES - CHAFF.**

a. **Nonexplosive chaff:** The preferred method is by melting or briquetting. When melting or briquetting is not economical or practical, items will be completely neutralized by cutting into small segments, or crushing (as with a tracked vehicle) so as to break the packing, wrapping, or sleeve from the chaff and cause complete derangement of the dipole sequence.

b. **Explosive chaff:** Remove and dispose of the explosive charge as directed for Category V, this Appendix, and neutralize the dipole sequence of the chaff as prescribed for nonexplosive chaff or detonate (technical instructions will be furnished as prescribed for Category V, this Appendix).

WARNING: STORAGE, HANDLING AND DISPOSAL OF CHAFF: Chaff reactivity characteristics are identified as a characteristically reactive material. Therefore it is recommended that prior to disposal of demilitarized chaff via landfill, that an acidic solution with a pH of 3-4 be used to soak the chaff as part of the demilitarization procedure in accordance with the Code of Federal Regulations, 40 CFR, Part 261.23(a)(3) and Part 268.42. Chaff may produce a flammable and explosive gas (hydrogen) if brought into contact with water and high heat/thermal temperatures. Sunlight accelerates the chaff/water reaction to produce hydrogen at a faster rate. Store all unopened chaff bundles (with intact barrier bags and within weight specifications) indoors until final destination is arranged. For further information regarding storage, handling and disposition of chaff, see NAVAIR 16-1-539 or contact the U.S. Naval Warfare Center, Aircraft Division, Code DP702N/MS44, Indianapolis, IN, DSN 369-2917, Commercial (317) 322-2917.

3. **ITEMS WHICH INCORPORATE TEMPEST TECHNOLOGY.**

a. If the TEMPEST application is to an item which is specifically designed for military use - complete destruction to preclude restoration as an item for its original function (this includes both entire end items and individual components, as applicable).

b. If the TEMPEST application is to a commercially available item, e.g., IBM-XT or AT personal computer, the generating activity will sanitize the equipment of all classified/sensitive data and software prior to turn-in to the DRMO. The turn-in document will be annotated that item has TEMPEST application and has been sanitized prior to turn-in. These items will then be considered Strategic List Items and incorporate all appropriate controls.

4. **TECHNICAL DATA** will be demilitarized by burning, shredding, or pulping.

5. **ALL OTHER ITEMS.** Complete destruction of key points to preclude restoration or remanufacture as an item for its original function.

WARNING: Cathode ray tubes will be broken only in accordance with procedures approved by local safety personnel.

**CATEGORY XII. FIRE CONTROL, RANGE FINDER,
OPTICAL, AND GUIDANCE AND CONTROL EQUIPMENT
(CATEGORY XII - U.S. MUNITIONS LIST).**

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

Gun range, position, height finders, spotting instruments and laying equipment.

Aiming devices (electronic, optic, and acoustic).

Bomb *and rocket* sights.

Periscopes.

Gyroscopes.

Radomes.

Astro compasses and star trackers.

Military and non-military accelerometers and gyros.

Optical elements.

Tubes and detectors.

Optical filters.

Weapon mounts.

Transmitters.

Receivers.

Processors.

Microprocessors.

Radio Frequency (RF) heads and cavities.

Logic circuits.

Memory circuits.

Collimators.

Amplifiers.

Intervalometers.

Traveling wave tubes.

Cathode ray tubes.

Klystrons.

Oscillators.

Noise generators.

Magnetron tubes or solid state devices.

Modulators and modulation circuits.

Frequency sensitive RF components.

Antennae.

Waveguides.

Frequency generators.

Tuning coils.

Printed circuit boards/cards.

Delay lines.

Synchronizers.

Encoders and decoders.

Computers specifically designed *or developed* for military application and any computer specifically modified for use with any category of the U.S. Munitions List.

Antenna horns.

Performance data plates.

Identification plates or decals that reveal any military offensive or defensive advantage.

Lasers specifically designed, modified or configured for military application including those used in military communication devices, target designators and range finders, target detection systems, and directed energy systems.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Key points to be demilitarized: Optical elements, tubes and detectors, optical filters, weapon mounts, transmitters, receivers, processors, microprocessors, indicators, RF heads and cavities, logic circuits,

memory circuits, accelerometers, collimators, amplifiers, intervalometers, traveling wave tubes, cathode ray tubes, klystrons, oscillators, noise generators, magnetron tubes or solid state devices, modulators and modulation circuits, frequency sensitive RF components, antennae, radomes, waveguides, frequency generators, tuning coils, printed circuit boards/cards, delay lines, synchronizers, encoders and decoders, computers, antenna horns, performance data plates, identification plates or decals that reveal any military offensive or defensive advantage and other items designated elsewhere in this Appendix and as indicated under paragraph E. below (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points).

Fire control systems.

Inertial platforms and sensors for weapons or weapons systems. For aircraft inertial reference systems and related components refer to Category VIII.

Guidance, control and stabilization systems except for those systems covered in Category VII.

Gun and missile tracking and guidance systems.

Bombing computers.

Military television sighting and viewing units.

Infrared focal plane array detectors.

Infrared, visible, and ultraviolet devices.

Image intensification and other night sighting equipment or systems.

Second generation and above military image intensification tubes (defined below).

NOTE: Special Definition. Second and third generation image intensification tubes are defined as having a peak response within the 0.4 to 1.05 micron wavelength range and incorporating a microchannel plate for electron image amplification having a hole pitch (center-to-center spacing) of less than 25 microns and having either: an S-20, S-25 or multialkali photocathode; or a semiconductor photocathode.

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Power supplies (non-missile related).

Components, parts, accessories, attachments, and associated equipment specifically designed or modified for the articles in this Category, except for such items as are in normal commercial use and not exceptioned above.

Technical data and defense services directly related to the defense articles enumerated above.

E. Method and degree of demilitarization:

1. **INFRARED NIGHTSIGHTING AND VIEWING EQUIPMENT.** Cutting, crushing, breaking or melting to the degree required to preclude repair or restoration to original intended use.

WARNING: Personnel engaged in demilitarization of this material should be aware of possible presence of self-luminous radioactive sights and coatings on certain optics. Demilitarization will be performed only in accordance with procedures approved by local safety personnel.

2. **TECHNICAL DATA** will be demilitarized by burning, shredding, or pulping.

3. **ALL OTHER ITEMS.**

a. **Electronic Components.** As directed in Category XI.

b. **Non-electric Items.** Destroy the item to the degree required to preclude repair or restoration; make sure that all lens or other optical components are completely destroyed.

CATEGORY XIII. AUXILIARY MILITARY EQUIPMENT

(CATEGORY XIII - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

Hardware and equipment that is associated with the measurement or modification of system signatures for detection of defense articles. This includes but is not limited to signature measurement equipment, prediction techniques and codes, signature materials and treatments, and signature control design methodology.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Attached items, components, parts, accessories, etc. that are covered under other Categories in this Appendix (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points) (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Armor (*organic, ceramic, metallic*) , armor plate and structural materials, including but not limited to plate, rolled and extruded shapes, bars and forgings, castings, welding consumables, carbon/carbon metal matrix composites (total destruction to prevent restoration to a usable condition).

All other armor and reactive armor which has been specifically designed or modified for defense articles.

Military Information Security Systems and equipment, cryptographic devices, software, and components, *including command, control and intelligence applications*, specifically designed or modified therefor, (total destruction), including:

Military cryptographic (including key management) systems, equipment, assemblies, modules, integrated circuits, components or software with the capability of maintaining secrecy or confidentiality of information or information systems, except cryptographic equipment and software as *follows: Tracking, telemetry and control (TT&C) encryption/decryption when embedded in a commercial satellite identified in the Commerce Control List; embedded means that the device or system cannot be feasibly be removed from the satellite and that it cannot be used for other purposes* (total destruction).

Military cryptographic (including key management) systems, equipment, assemblies, modules, integrated circuits, components or software which have the capability of generating spreading or hopping codes for spread spectrum systems or equipment (total destruction).

Military cryptanalytic systems, equipment, assemblies, modules, integrated circuits, components or software (total destruction).

Military systems, equipment, assemblies, modules integrated circuits, components or software providing certified or certifiable multi-level security or user isolation exceeding class B2 of the Trusted Computer System Evaluation Criteria (TCSEC) and software to certify such systems, equipment or software (total destruction).

Ancillary equipment specifically designed or modified for the items listed above (total destruction).

Devices embodying particle beam and electromagnetic pulse technology and associated components and subassemblies (e.g., ion beam current ejectors, particle accelerators for neutral or charged particles, beam handling and projection equipment, beam steering, fire control, and pointing equipment, test and diagnostic instruments, and targets) which are specifically designed or modified for directed energy weapon applications (total destruction).

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Cameras including space cameras and specialized processing equipment therefor; photointerpretation, stereoscopic plotting, and photogrammetry equipment which are specifically designed or modified for military purposes, and components specifically designed or modified therefor.

Self-contained diving and underwater breathing apparatus including closed and semi-closed circuits (rebreathing) apparatus, specially designed components for use in the conversion of open-circuit apparatus to military use, and articles exclusively designed for military use with self-contained diving and underwater swimming apparatus.

Carbon/carbon billets and preforms which are reinforced with continuous unidirectional tows, tapes, or woven cloths in three or more dimensional planes (i.e. 3D, 4D, etc.). This is exclusive of carbon/carbon billets and preforms where reinforcement in the third dimension is limited to interlocking of adjacent layers only, and carbon/carbon 3D, 4D, etc. end items which have not been specifically designed or modified for defense articles (e.g., brakes for commercial aircraft or high speed trains). Structural materials including carbon/carbon and metal matrix composites, plate, forgings, castings, welding consumables and rolled and extruded shapes which have been specifically designed or modified for defense articles.

Concealment and deception equipment, including but not limited to special paints, decoys, and simulators and components, parts and accessories specifically designed or modified therefor.

Energy conversion devices for producing electrical energy from nuclear, thermal, or solar energy, or from chemical reaction which are specifically designed or modified for military application.

Chemiluminescent compounds and solid state devices specifically designed or modified for military application.

Metal embrittling agents.

Components, parts, accessories, attachments, and associated equipment specifically designed or modified for the articles in this Category, except for such items as are in normal commercial use.

Technical data and defense services directly related to the defense articles enumerated above.

E. Method and degree of demilitarization: Items will be destroyed by cutting, burning, breaking, crushing, etc., as appropriate, to preclude restoration for further use as an item or for identification and association of related parts.

1. **ITEMS** will be destroyed by cutting, burning, breaking, crushing, etc., as appropriate, to preclude restoration for further use as an item or for identification and association of related parts.

2. **TECHNICAL DATA** will be demilitarized by burning, shredding or pulping.

CATEGORY XIV. TOXICOLOGICAL AGENTS AND EQUIPMENT AND RADIOLOGICAL EQUIPMENT

(CATEGORY XIV - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

Chemical agents, including but not limited to lung irritants, vesicants, lachrymators, tear gases (except tear gas formulations containing 1% or less CN or CS), sternutators and irritant smoke, and nerve gases and incapacitating agents (see Appendix 2, Definitions and Interpretations). These items will be assigned Demilitarization Code "G".

Biological agents (see Appendix 2, Definitions and Interpretations) These items will be assigned Demilitarization Code "G".

Nuclear radiation detection and measuring devices, manufactured to military specification.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points) (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

Equipment for dissemination, detection, and identification of, and defense against, the items in paragraphs A of this Category, including but not limited to vehicular mounted and fixed collective protection equipment and field shelter ventilating systems, including gas/gas particulate filters and canisters, air filtering respirators and air respirator cartridges. Key points - Filtration systems; canister/filter; and entire filter unit. All other items as designated by the managing DoD Component (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Components, parts, accessories, attachments, and associated equipment specifically designed or modified for the articles in this Category, except for such items as are in normal commercial use.
Technical data and defense services directly related to the defense articles enumerated above.

E. Method and degree of demilitarization:

1. **ITEMS** will be demilitarized in accordance with existing environmental, safety and operations regulations prescribed by the inventory control point to the point of assuring freedom from hazard. Technical instructions for toxicological and biological agents and equipment will be furnished as prescribed for **Category 4** above. Technical instructions for radiological agents and equipment will be furnished by the following persons or organizations within the Military Services having overall knowledge and responsibility for disposal of radioactive material within their respective services.

a. Army - Commander, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-DSM, Rock Island, IL 61299-6000.

b. Navy - Primary Support Bureau, Command or Office.

c. Air Force - San Antonio Air Logistics Center, ATTN: MMIA, Kelly Air Force Base, TX 78241-5000.

d. Marine Corps - Commandant of the Marine Corps (Code LMA-3), Washington, D.C. 20380-0001.

e. Defense Logistics Agency (DLA) - Appropriate ICA managing the item.

2. **TECHNICAL DATA** will be demilitarized by burning, shredding, or pulping.

CATEGORY XV - SPACECRAFT SYSTEMS AND ASSOCIATED EQUIPMENT

(CATEGORY XV - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

Spacecraft and associated hardware including ground support equipment, specifically designed or modified for military use.

Remote sensing satellites.

Radomes.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points) (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Global Positioning Systems (GPS) receiving equipment designed for encryption or decryption (e.g., Y-Code) of GPS precise positioning service (PPS) signals that is specifically designed, modified or configured for military use (total destruction).

Communications satellites specifically designed, modified or configured for military use (total destruction).

Ground control stations for remote sensing satellites as follows (total destruction):

Ground control stations for telemetry, tracking and control of such satellites; and

Passive ground stations for remote sensing satellites employing any of the cryptographic devices in Category XIII or employing any uplink command capability.

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Communications satellites as specified in Category XV of the USML and not enumerated in paragraph C. above.

GPS receiving equipment specifically designed, modified or configured for military use; or GPS receiving equipment as specified in Category XV of the USML and not enumerated in paragraph C. above.

Components, parts, accessories, attachments, and associated equipment (including ground support equipment) specifically designed, modified or configured for the articles in this Category, as well as for any satellites under the export licensing jurisdiction of the Department of Commerce except as noted in the USML, Category XV, Explanatory Note.

Technical data and defense services directly related to the defense articles enumerated above. In addition, detailed design, development, production or manufacturing data for all spacecraft systems and specifically designed or modified components thereof, regardless of which U.S. Government agency has jurisdiction for export of the *spacecraft*.

E. Method and degree of demilitarization:

1. **ITEMS** will be destroyed by cutting, burning, breaking, crushing, etc., as appropriate, to preclude restoration for further use as an item or for identification and association of related parts.

2. **TECHNICAL DATA** will be demilitarized by burning, shredding, or pulping.

CATEGORY XVI - NUCLEAR WEAPONS DESIGN AND TEST EQUIPMENT

(CATEGORY XVI - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

Any article, material, equipment, or device which is specifically designed or modified for use in the design, development, or fabrication of nuclear weapons or nuclear explosive devices.

Any article, material, equipment, or device which is specifically designed or modified for use in the devising, carrying out, or evaluating of nuclear weapons tests or any other nuclear explosions, except such items as are in commercial use for other purposes.

Cold cathode tubes such as krytrons and sphytrons.

Technical data and defense services directly related to the defense articles enumerated above.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points) (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

RESERVED

E. Method and degree of demilitarization:

1. Specific instructions and technical guidance will be furnished by the procuring Military Service/Defense Agency upon request.

2. **TECHNICAL DATA** will be demilitarized by burning, shredding, or pulping.

CATEGORY XVII - CLASSIFIED ARTICLES

(CATEGORY XVII - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "P".

All articles, technical data and defense services relating thereto which are classified in the interest of national security and which are not otherwise enumerated in this Appendix.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

RESERVED

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

RESERVED

E. Method and degree of demilitarization: In accordance with owning Military Service directives for safeguarding and/or disposal of classified material.

CATEGORY XVIII - RESERVED

CATEGORY XIX - RESERVED

**CATEGORY XX. SUBMERSIBLE VESSELS,
OCEANOGRAPHIC AND ASSOCIATED EQUIPMENT
(CATEGORY XX - U.S. MUNITIONS LIST).**

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

Radomes.

Technical data related to the manufacture or production of any defense article enumerated in subparagraphs A. and B.

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Key points to be demilitarized: As designated by the procuring DoD Component (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points).

Submersible vessels, manned and unmanned, tethered and untethered designed or modified for military purposes or powered by nuclear propulsion plants.

Swimmer delivery systems designed or modified for military purposes.

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Components, parts, accessories, attachments, and associated equipment specifically designed or modified for the articles in this Category, except for such items as are in normal commercial use.

Technical data and defense services directly related to the defense articles enumerated above.

E. Method and degree of demilitarization:

1. As indicated by the procuring Military Service/Defense Agency.

2. **TECHNICAL DATA** will be demilitarized by burning, shredding, or pulping.

CATEGORY XXI. MISCELLANEOUS ARTICLES

(CATEGORY XXI - U.S. MUNITIONS LIST).

A. The following items are designated as SME and require total destruction worldwide. They are normally assigned a Demilitarization Code "D".

RESERVED

B. The following items are designated as SME and require key point demilitarization worldwide. They are normally assigned a Demilitarization Code "C":

Test equipment containing components listed in paragraphs A through C of the Categories in this Appendix (subject components are key points) (NOTE: Components, parts, etc. listed as a "key point" would themselves be assigned Demilitarization Code "D").

C. The following items are designated as MLI and the DoD Demilitarization Program Office has determined them to be of a critical and/or sensitive nature that requires total or key point destruction. These items and their key points are normally assigned a Demilitarization Code "E":

Research and development material. (Key points - such points as required to protect security, design features, and proprietary rights and public health, safety, and welfare.)

Partially complete material including but not limited to forgings, castings, extrusions, and machined bodies, which have reached a stage in manufacture where they are clearly identifiable, and which are a key point or incorporate a key point. (Key points - As indicated for the completed item.)

Special tooling, dies, jigs, etc., *as specified in paragraph E, below*, used in the production and/or manufacture *or repair* of any of the items listed in paragraphs A. and B. in Categories I through XXI above.

Technical data relating to the design, engineering, development, processing, use, operation, overhaul, repair, testing, maintenance, modification or reconstruction of any item in paragraphs A through C, this Category (total destruction by shredding, pulping or burning).

D. The following items are designated as MLI and do not require demilitarization. They are normally assigned a Demilitarization Code "B".

Any article not specifically enumerated in other Categories of the U.S. Munitions List which has substantial military applicability and which has been specifically designed or modified for military purposes. The decision on whether any article may be included in this category shall be made by the Director of the Office of Defense Trade Controls, U.S. Department of State.

Technical data and defense services directly related to the defense articles enumerated above.

E. Method and degree of demilitarization:

1. **RESEARCH AND DEVELOPMENT MATERIAL:** Completely destroy the end assembly if applicable and mutilate components as required to comply with the above. Destruction of assembly or components will be performed as specified for similar items listed in this Appendix by cutting, torching, breaking, shearing, etc., to destroy the identity of the item or component.

2. **PARTIALLY COMPLETE MATERIAL:** As indicated for the entire item.

3. **SPECIAL TOOLING:**

a. The following categories of special tooling will be demilitarized if used in the production, manufacture or repair of any of the items listed in paragraphs A. and B. in Categories I through XXI above:

- (1) Master Tooling*
- (2) Template Set-Ups*
- (3) Molds*
- (4) Dummy Part Masters*

b. The following categories of special tooling will be demilitarized if used in the production, manufacture or repair of any of the items listed in paragraphs A. and B. in Categories I through XXI above, but only if they are used to produce the final dimension, shape or configuration of that end item and the component, part or attachment of that end item which requires demilitarization in accordance with this manual. Therefore, tooling associated with these key points and meeting the criteria of subparagraph a. or b. above, would also require demilitarization.):

- (1) Templates*
- (2) Forming Tools*
- (3) Gauges*
- (4) Dies*
- (5) Jigs*
- (6) Fixtures*
- (7) Computer Data (including both software and hardware).*

c. Coding and degree of demilitarization will be as follows:

(1) Demilitarization Code A (No demilitarization/Trade Security Controls(TSCs) required): Including, but not limited to, material handling equipment, slings, work platforms, protective service devices.

(2) Demilitarization Code B (No demilitarization required. TSCs are required): Including, but not limited to, holding fixtures, mill fixtures, templates, bonding jigs (not meeting criteria of paragraph 3. above).

(3) Demilitarization Code C (Key point demilitarization required): Including, but not limited to, curing fixtures, bonding fixtures, trim fixtures (key points are top portions which have final shape and contour).

(4) Demilitarization Code D (Total destruction required): Including, but not limited to, mock-ups, plastic applied templates, dummy hot part engine, forming dies.

(5) Demilitarization Code Q (No demilitarization required. TSCs are required): tooling for gas turbine blade drilling processes, tooling for powder metallurgy rotor blade component manufacture